

20152
S/138/60/000/012/005/009
A051/A027

The Formulation and Technology Characteristics of Applying Glass Fabrics and the Properties of Rubber-Fabric Materials Based on It

Table 7: Effect of various media on the stability of the glass fabric T₁ and rubber fabric material on its base. ① Characteristics of the glass fabrics; ② Stability, kg/25-mm strip; ③ Initial; ④ After holding; ⑤ in water; ⑥ in 3% NaOH solution; ⑦ in 3% HCl solution; 8 30 days; 9 90 days; 10 30 days; 11 90 days; 12 30 days; 13 90 days.
a Glass fabrics without coating;
b Glass fabrics with rubber coating.

Характеристика стеклоткани	Прочность, кг/полосу 25 мм							
	исход- ная	после выдержки						
		в воде		в 3%-ном растворе NaOH		в 3%-ном растворе HCl		
		30 су- ток	90 су- ток	30 су- ток	90 су- ток	30 су- ток	90 су- ток	
Стеклоткань без покрытия	145	115	92	100	65	61	45	
Стеклоткань с ре- зиновым покры- тием	140	130	105	125	115	105	95	

Card 11/11

AUTHORS: Mayzel's, M. G., Rayevskiy, V. G., S/153/60/003/01/049/058
Gridunov, I. T. B011/B005

TITLE: Influence of Processing Conditions of Rubberized Textiles on Their
Permeability to Gas 6

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya
 tekhnologiya, 1960, Vol 3, Nr 1, pp 179-181 (USSR)

TEXT: The authors investigated the following rubberized textiles: cotton (percale), polyamide (caprone), glass cloth. The rubber coats were prepared from synthetic rubber of various types and polarities: polybutadiene (SKB), polychloroprene (nairite), copolymer of isoprene with isobutylene (butyl rubber). They contained 10 parts by volume of lampblack. The investigation was carried out by the method of joint determination of the permeability constant P and the diffusion constant D . The solubility constant (σ) was computed from the constants by the equation $P = D \cdot \sigma$. The permeability to gas was measured with hydrogen on Sheakspeare's device. Table 1 shows the 3 constants of the rubber coats used. Table 2 lists the constants of the corresponding rubberized textiles produced by calendering, spreading, or pressing. A comparison of tables 1 and 2 shows that by the introduction of textiles into the composition the characteristic values of permeability to gas are reduced in all cases. In the case of calendered rubberized textiles, the per-

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Influence of Processing Conditions of Rubberized
Textiles on Their Permeability to Gas

S/153/60/003/01/049/058
B011/B005

meability constant of cotton is reduced the most, that of glass cloth the least. This order does not agree with the order of substances with respect to their own permeability to gas. Therefore, the authors attribute a decisive role to the manufacturing method of rubberized textiles. The permeability to gas of spread materials is much lower than that of calendered ones. According to the absolute values of the permeability constants, the textiles used form the following order: glass cloth < polyamide < cotton. The same order applies to pressed rubberized material, the constants, however, being smaller. Table 3 shows that by the introduction of textiles not only P but also σ is reduced since the solubility of gases in textiles is low. Table 4 shows the influence of textile impregnation with an adhesive (aqueous solution of epoxy-amine resin) on the strength of the bond between material and rubber in calendered textiles. It also shows that such an impregnation leads to a considerable reduction of the permeability- and diffusion constants, and to a noticeable decrease in the solubility constant of gas. This is achieved by the action of 2 favorable factors: solidification of the structural composition, and filling of some part of the microvacuoles by the adhesive. Thus, the gas cannot diffuse so easily through the system. The role of activated diffusion in the total mechanism of the process is also increased. There are 4 tables.

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Influence of Processing Conditions of Rubberized
Textiles on Their Permeability to Gas

S/153/60/003/01/049/058
B011/B005

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V.
Lomonosova; Kafedra tekhnologii reziny
(Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov;
Chair of Technology of Rubber)

SUBMITTED: February 14, 1959

Card 3/3

MAYZEL'S, M.Ye., kand.khim.nauk; RAYEVSKIY, V.G.

Selection of optimum conditions for the vulcanization of rubber
goods based on new synthetic rubbers. Trudy NIIRP no. 7:34-51
'60. (MIRA 14:1)

(Rubber goods) (Rubber, Synthetic)

RAYZVSKIY, V.G.; VOYUTSKIY, S.S.

Effect of the vulcanization of elastomers on their adhesion to
nonvulcanizable polymers. Dokl. AN SSSR 135 no.1:133-136 N'60.

(MIRA 13:11)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.
Lomonoso va. Predstavleno akademikom S.S.Medvedevym.
(Vulcanization) (Adhesion)

MAYZEL'S, M.G. [deceased], RAYEVSKIY, V.G.

Ingredients and technological characteristics of glass fiber,
and properties of rubberized fabrics made from it. Kauch.i rez.
19 no.12:18-24 D '60. (MIRA 13:12)

1. Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti.
(Rubberized fabrics) (Glass fibers)

20807

6, 118, 01/000/002-003/008
A51-1129

15 0000 2209 1526, 1210

AUTHORS: Mayzel', V.G. (Deceased), Rayevskiy, V.G.; Gridanov, I.T.; Stro-
gov, L.P.

TITLE: Formulation-technological features of capron fabric application in
the constructions of rubber-fabric materials and properties of mate-
rials on this base

PERIODICAL: Kauchuk i rezina, no. 2, 1961, 11 - 15

TEXT: The authors deal with the formulation and technological properties
of capron application (impregnation with adhesives, rubberizing with adhesive ce-
ments, calendaring, vulcanizing) and also with the properties of rubber-fabric
materials on this base. In impregnating with adhesives, the authors suggest that
the impregnation of the capron fabric be carried out prior to the rubber coating
application, since there is a weak adhesion of the capron fabrics to the rubber
coatings. The effect of capron impregnation was tested using various
types of synthetic resins. The No. 89 resin provided the greatest strength of
adhesion in capron impregnation, and the IT9M-2 (PEM-2) resin showed the same ef-
fect in the non-polar rubbers [NR, ChW (SKI), ChE (SKB), butyl rubber]. The No.

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20507

Formulation-technological features....

5/133/61/000/002/003/008
A051/A129

89 resin also increases the lamination resistance of the elements of the material. Comparative studies were made of the strength of adhesion of rubber-fabric elements of materials during various periods of time after the capron impregnation from 2 hours to 6 months. The values of the strength of adhesion with the capron fabric were found to differ very little. The retarded nature of the capron moistening as compared to that of cotton fabric is said to determine the somewhat lower rates of its rubberizing. Capron has also a lower strength of cohesion with the moist adhesive film as compared to the cotton fabrics. The latter is thought to be the cause of the wearing-out of the raw coating and its shift to the opposite side of the fabric in vulcanization. Due to the low specific surface of the capron fiber and the small contact surface of the rubber with the capron fabric, calendaring of the materials should be carried out under conditions ensuring maximum depth of penetration of the coating into the textile structure. The temperature conditions of the capron fabric calendaring are found to be similar to those of glass fabric. The boiler- and chamber-type vulcanization of these materials is recommended, and when producing highly elastic material and a smooth surface, it is suggested that vulcanization in apparatus of the "Bers-terr" type be used. Mechanical properties of rubber-fabric materials based on capron are listed. It is pointed out that these are less affected by the composi-

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3/138/61/000/002/003/008

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Formulation-technological features....

tion of the rubber coating than in the case of glass fabrics. The highest degree of a drop in strength in these materials is noted for those with a rubber coating having a pH of water extract less than 7 [nairite, UKC-30-1 (SKS-30-1)]. The value of the tear-resistance depends to a great extent on the type of twist of the initial fabric. The characteristic features of the mechanical properties of capron-based materials are said to be the high relative elongations in rupture, reaching 25 - 30%. The lamination resistance drops with an increase in temperature, determined by the weakening of the intermolecular interaction in the border-line interface rubber-fabric, and by the drop in strength of the coating proper. The tear-resistance is determined by the strength of the coating and the value of its cohesion. The use of No. 89 resin-impregnated capron fabrics increases the wear-resistance by 2 - 4 times. The latter materials have an elevated resistance to aggressive media as compared to similar materials based on cotton and glass fabrics. Concentrated acids have a strong effect on capron materials, causing increased hardness in some cases. The capron rubber-fabric materials have a somewhat higher resistance to thermal aging as compared to similar materials based on cotton, but are inferior to glass fabrics and other chemical materials in this respect. Light is thought to cause the greatest destruction of the capron materials in natural aging. The application of capron-based rubber-fabric materials

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Formulation-technological features....

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not protected by external rubber coatings cannot be recommended under conditions of atmospheric usage. Capron fabrics are said to have higher dielectrical properties than cotton fabrics. They have a high electrical tension of the surface charges on the side not protected by the rubber coating. At a relative humidity of 65% the double-layer rubberized material based on 1516 grade capron (internal layer: non-filler non-polar rubber) has the following dielectric characteristics: $\rho_v = 1.3 \cdot 10^{13} - 1.5 \cdot 10^{14}$ ohm \cdot cm; $\rho_s = 2.9 \cdot 10^{12} - 2.8 \cdot 10^{13}$ ohm, surface potentials $I = 465 - 1,543$ v. A lowering of the dielectric properties of the capron materials can be accomplished by introducing electroconducting components (carbon black, graphite) into the composition of the rubber coating. Finally, capron-based rubber-fabric materials are characterized by lower values of the constants of the gas- and vapor-permeability than the initial rubber coatings. The nature of the latter has a great effect on the value of the permeability. The method used for the formation of the material has an effect on the permeability constant due to the production of materials of various degrees of monolithic properties. Materials based on capron and obtained by various technological methods are arranged in the following series according to the values of the permeability constants: calendered > rubberized with adhesive cements > pressed. There are 6 tables and 2 Soviet references.

ASSOCIATION: Nauchno-Issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute of the Rubber Industry)

Card 4/4

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30912

S/190/61/003/012/006/012
3106/3101

Author Rayevskiy, V. G. ; Voyutskiy, S. S. ; Livartova, I. V.
Lentynberg, L. D.

Title Effect of various types of structure formation of elastomers
on their adhesion to fibrous polymers. I. Effect of
vulcanization by sulfur on adhesion of rubber to fibrous
polymers

Periodical Vysokomolekulyarnyye soedineniya, v. 5, no. 12, 1961,
1827-1832

TEXT. It was found previously (Ref. 4 V. G. Rayevskiy, S. S. Voyutskiy,
Soviet Chem. 1960, 1960; Ref. 5 V. G. Rayevskiy, S. S. Voyutskiy,
Doklady Akad. Nauk, 1961, no. 5, 22) that the dependence of adhesion of
rubber to fibrous polymers on vulcanization time was represented by a
curve with a maximum. This correlation and its dependence on the type of
linkage which may form a steric network in the case of vulcanization is to
be explained in the present communication which constitutes the beginning
of a series of studies. Mixtures of elastomers of different polarities
Var. 1/1

Effect of various types of structure

30912
S/190/61/006, 012/006/012
B104/B101

rubbers (KH-25, SKN-25); CKC-30A (SKC-30A); CKC-30APM 15 (SKS 30AR1-15) and polybutadiene with optimum vulcanizing additions (sulfur; zincopal; zincdibenzothiazole; dibenzothiazole disulfide; tetramethylthiuram disulfide; zinc oxide; stearic acid; lamp black; Noron D) were used in the experiments. For the TV-2 (PK-1) polycaprolactam and polypropylene-ethylene foils were used as substrates. Production of rubber-foil bonds took place under conditions described in Ref. 4. σ -curves (Fig. 1) were plotted from data of Ref. 4 and from σ_0 values determined by the authors by swelling in benzene. In all cases investigated, specific adhesion decreased abruptly after a certain limit of structure formation had been reached. This limit is characterized by a σ_0 value and is practically not dependent on the nature of the fibrous polymer substrate. It is proportional to the mean molecular weight of the chain section between two nodes of the stereo network ($M_p/6600$). The abrupt decrease of adhesion after reaching the limit of structure formation is caused by the concurrence of tensions in the contact zone as a consequence of the shrinkage of rubber during vulcanization, and by swelling after

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B106/B101

Effect of various types of rubber

Adhesive strength of adhesive depends on all samples investigated. And it is the stronger, the thinner the rubber film because shrinkage factor in the contact zone increase with increasing thickness of film. All experimental observations of this study fully agreed with the diffusion theory of adhesion. The stronger adhesion to Perfol as compared with cellulosic is due to the extraordinary rigidity of molecular chains of cellulose, and its high packing density which complicates the infiltration of elements of rubber molecules. The optimum degree of vulcanization, giving a maximum adhesion, can be utilized in the industry. Vulcanization conditions used at present for rubber fabric materials bring about a network with a molecular weight of $M_c = 5000-6000$. The minimum

value of M_c where stability of the adhesive bond does not yet decrease (break) is at $5000-6000$ in the types of rubber investigated. Consequently, it is possible to increase considerably the bond strength of rubber fabric materials by lowering the vulcanization degree of rubber layers directly adhering to the fabric. A lower degree of vulcanization of these layers is compared with the degree of vulcanization of the bulk of rubber can be achieved without varying vulcanization conditions used

hard

25159

S/153/61/004/006/007/008
E134/E453

15.8350

AUTHORS: Rayevskiy, V.G., Voyutskiy, S.S., Shteynberg, Z.D.

TITLE: Relation of gas-permeability to bond strength in materials based on the bonding of an elastomer to a polymeric fibre

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy.
Khimiya i khimicheskaya tekhnologiya, v.4, no.6, 1961,
1022-1025

TEXT: The authors investigated the dependence of hydrogen permeability and fibre-to-rubber adhesion of rubber reinforced with polymeric fibres on the degree of impregnation. The fabrics "perkal' A" (cellulose), "kapron art. 1520" (polyamide) and "steklotkan' T₁" (glass fibre), similar in structure, were coated with carbon-black-filled SKB-25 (SKB-25) rubber compound by calendering. To obtain different degrees of homogeneity, the plies were pressed on a continuous vulcanizer at pressures up to 175 atm before being steam vulcanized at 143°C. The permeability of hydrogen gas was measured electrically on the basis of changes of heat conductivity of the air in the closed space of the
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Relation of gas-permeability ...

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apparatus below the test sample. A table summarizing pressures applied to the plies, density, and degree of homogeneity is given for fabrics based on all three fabrics. The fabric based on glass fibre is less homogeneous than the others but shows greater changes of homogeneity with varying pressure. The lower homogeneity of the glass fibre product is thought to be connected with wettability. A set of curves, showing permeability coefficients, resistance to ply-separation at different degrees of homogeneity, is given for all three materials. These show decreasing permeabilities and increased bond strength between resin and fabric with increasing homogeneity. The nature of ply-separation also changes; with materials produced at low pressures it takes place without visible damage to the coating layer but damage occurs with materials produced at high pressure. This change of character takes place at the following degrees of homogeneity: cellulose, 84%; polyamide, 88%; glass fibre, 65%. The extent of mechanical adhesion increases with rising manufacturing pressure. It was shown that for a given increase in the percent impregnation, gas permeability decreases linearly

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Relation of gas-permeability ...

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with increasing bond strength. There are 2 figures and 1 table.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy
tekhnologii im. M.V.Lomonosova i Nauchno-
issledovatel'skiy institut rezinovoy promyshlennosti
Kafedra kolloidnoy khimii
(Moscow Institute of Fine Chemical Technology and
Scientific Research Institute of the Rubber Industry
Department of Colloidal Chemistry)

SUBMITTED: February 4, 1961

Card 3/3

20864

15.9300

1526, 1474, 1451

S/138/61/000/003/004/006
A051/A129

AUTHORS: Rayevskiy, V. G., and Voyutskiy, S. S.

TITLE: The effect of vulcanization of the bond strength of elements of rubber-fabric articles

PERIODICAL: Kauchuk i rezina, no. 3, 1961, pp. 22-26

TEXT: The authors describe their attempt at determining the general nature of the relationship between the various effects of the degree of vulcanization and the bond strength of rubber and fabric. Rubber mixtures based on butyl rubber, CKK-30A (SKS-30A), CKK-30AFM-15 (SKS-30 ARM-15) and CKK-26 (SKN-26) were investigated and polyamide fabric (capron article 1520), cotton (percale) and glass (glass-fiber T₁) were chosen as the fabrics. If the adhesion of the rubber mixtures based on SKS-30 ARM-15 not containing vulcanizing groups increases with an increase in the duration of contact, then the adhesion of the mixtures with a vulcanizing group passes through a maximum (Fig. 1). There is an optimum degree of vulcanization corresponding to a maximum value of specific adhesion. Figure 2 shows the effect of the vulcanization duration of the rubber mixture based on SKS-30A and SKS-30 ARM-15

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The effect of vulcanization of the...

on the strength of its bond with the fabrics. It is pointed out that the bond strength of the rubber coating with the fabrics and the specific adhesion to the films change in the same manner. The effect of the vulcanization duration of the rubber mixtures based on butadiene-nitrile rubber CKH-26 (SKN-26) on the strength of its bond with the fabric is of a similar nature. The highest strength of the bond with the fabrics is noted for rubber coatings based on butyl rubber. The high values characteristic for rubber coatings on this base are determined by two factors: 1) highly satisfactory plasto-elastic properties of this polymer leading to a deep penetration of the mixture into the fabric in calendaring and vulcanization (M. G. Mayzel's, V. G. Rayevskiy - Ref. 7: Kauchuk i rezina, no. 12, 18, 1960), 2) butyl rubber is a linear polymer in its molecular structure. Its comparatively low molecular weight ensures high concentration of the ends of the molecules, capable of diffusing with ease. It was established that the bond strength of the rubber coatings not containing vulcanizing groups with fabrics and films increases continuously (but at different rates) with an increase in the duration of the contact, which indicates that diffusion processes are taking place at the zone of contact. The table shows the values of the bond strength of the rubber and fabric in vulcanization corresponding to the op-

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The effect of vulcanization of the...

timum of the physico-mechanical properties of rubber (35 min, at 143°C) and optimum for the bond strength (15 min, at 143°C). It is seen therefrom that the duration of the vulcanization drop from 35 to 15 min allows for an increase in the bond strength of the rubber with the fabric by 1.9 to 3.0 times. The authors point out that this fact can be used to increase the bond strength when developing rubber-fabric articles by means of a corresponding drop in the degree of vulcanization of the rubber layers lying directly against the fabrics. In addition to increasing the bond strength, the indicated measures considerably reduce the cost of the articles due to a decrease in the contents of expensive ingredients of the vulcanizing group. There are 4 sets of graphs, 1 table and 7 references: 6 Soviet, 1 French.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova i Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Moscow Institute of Fine Chemical Technology im. M. V. Lomonosov and Scientific Research Institute of the Rubber Industry)

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The effect of vulcanization of the...

Table: Strength of bond of the rubber with the fabric at various durations of vulcanization

Type of rubber in the rubber mixture	Type of fabric	Resistance to lamination (g/cm) after vulcanization for a period of	
		35 min	15 min
SKS-30A	percal	900	1,500
the same	capron	350	1,050
"	glass fabric	600	1,350
SKN-26	percal	1,150	2,000
the same	capron	200	700
"	glass fabric	400	1,200
butyl rubber	percal	2,600	3,900
the same	capron	2,000	3,600
"	glass fabric	2,700	4,000

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The effect of vulcanization of the...

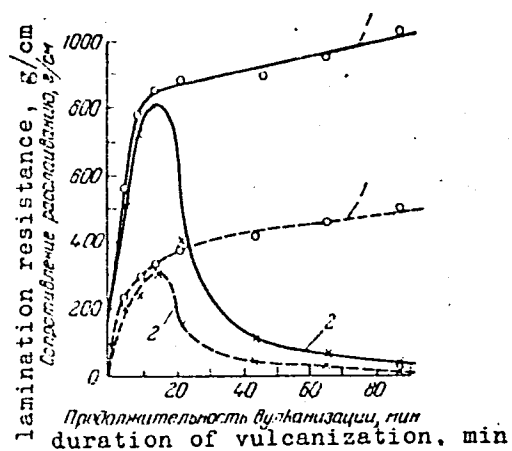


Figure 1:

Change of resistance to lamination of the rubber coating from SKS-3C AM-15 to the polyamide film (—) and cellophane (---) when kept under conditions of vulcanization:

- 1 - rubber coating does not contain a vulcanizing group,
- 2 - rubber coating contains a vulcanizing group.

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A051/A129

The effect of vulcanization of the...

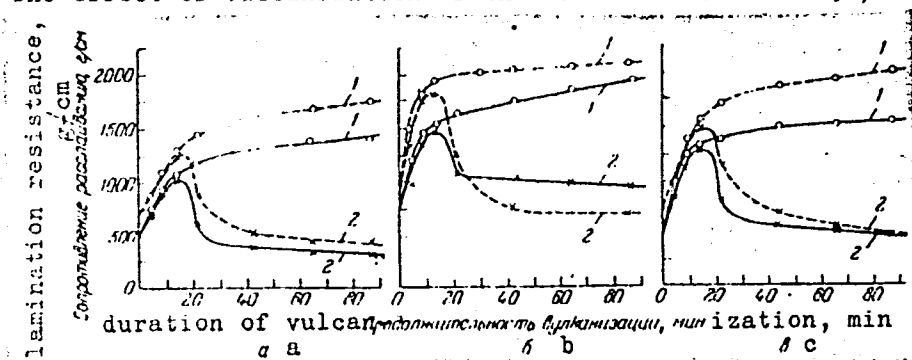


Figure 2: Change in the lamination resistance of the rubber coating based on SKS-30A (—) and SKS-30 ARM-15 (---) from the textile base when kept under conditions of vulcanization:

a - capron; b - percal; c - glass fabric.

1 - coating does not contain a vulcanizing group; 2 - coating contains a vulcanizing group.

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The effect of vulcanization of the...

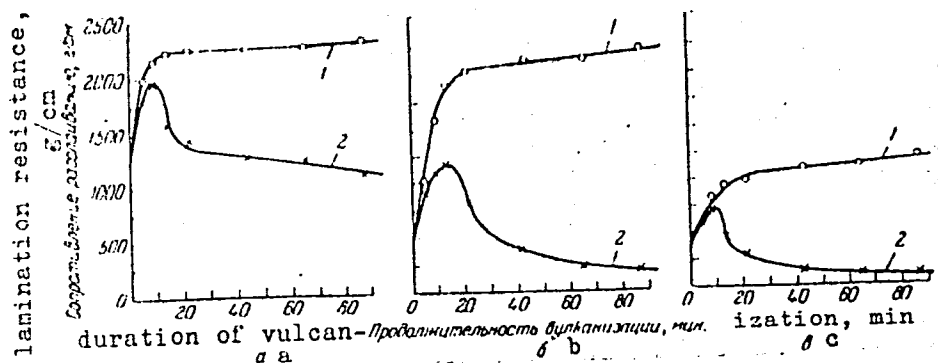


Figure 3: Change in the lamination resistance of a rubber coating based on SKN-26 from the textile base when kept under conditions of vulcanization:

a - percal; b - glass fabric; c - capron.

1 - coating does not contain a vulcanizing group; 2 - coating contains a vulcanizing group.

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The effect of vulcanization of the...

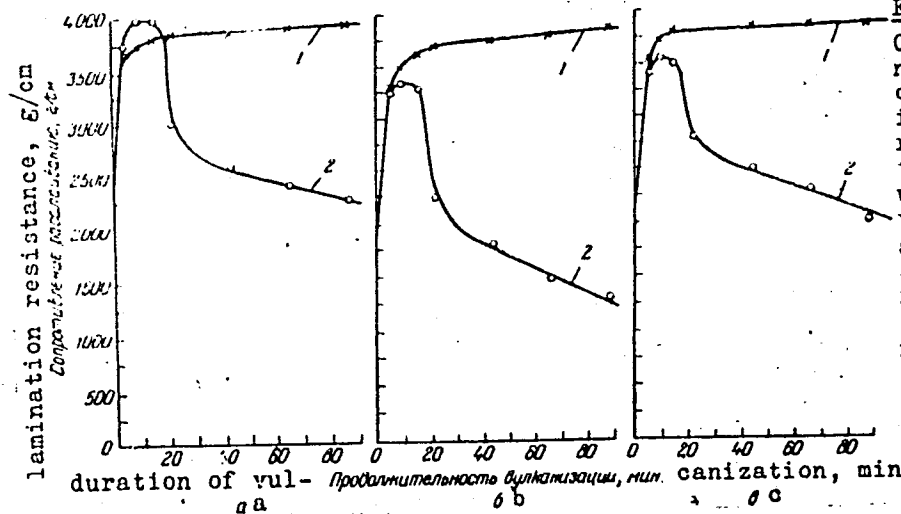


Figure 4:

Change of the lamination resistance of the rubber coating based on butyl rubber from the textile base when kept under conditions of vulcanization:

a - percal; b - capron; c - glass fabric.

1 - coating does not contain a vulcanizing group;
2 - coating contains a vulcanizing group.

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84672

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S/020/60/135/001/025/030
B004/B056

11.2320

AUTHORS:

Rayevskiy. V. G., and Voyutskiy. S. S.

TITLE:

The Influence Exerted by the Vulcanization of Elastomers
Upon Their Adhesion to Non-vulcanizable Polymers ¹⁵

PERIODICAL:

Doklady Akademii nauk SSSR, 1960, Vol. 135, No. 1,
pp. 133-136

TEXT: As in practice combinations of rubbers with non-vulcanizable fibers are frequently used, the authors investigated the effect of vulcanization of rubbers on their adhesion to non-vulcanizable polymers. Investigations were carried out of CKH-26 (SKN-26) butadiene-acrylonitrile rubber, CKC-30A (SKS-30A) butadiene styrene rubber, CKC-30APM-15 (SKS-30ARM-15) butadiene styrene rubber with oil plasticizer, and butyl rubber. From these rubbers, vulcanizable mixtures were produced or the corresponding quantity of chalk was added as inert filler. As substrata, cellophane and ПK-4 (PK-4) Perfol (polycaprolactam) were used. The connection between rubber and substratum was brought about X

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The Influence Exerted by the Vulcanization
of Elastomers Upon Their Adhesion to Non-
vulcanizable Polymers

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by means of a calender. The rubber was then vulcanized, the duration of vulcanization being varied between 0 and 88 min. The specific adhesion was determined by measuring the force necessary for separating the layers. In rubbers containing chalk as a filler (Fig. 1) an increase of adhesion with the duration of heating was observed. This is explained by diffusion processes. In vulcanized rubbers (Fig. 2), adhesion increases within the first 15 min for the same reason, passes through a maximum, after which it decreases considerably. This effect is explained by shrinkage of the elastomer structuring during vulcanization. Adhesion is, besides, dependent on the molecular structure of the substances. Butyl rubber with low molecular weight, and therefore a high content in end groups, showed the maximum adhesion. The styrene complexes of the styrene rubbers made adhesion more difficult. The SKS-30ARM-15 rubber showed better adhesion than the same kind of rubber without oil plasticizer, because of greater mobility of its molecule chains. Regardless of the fact as to whether vulcanization took place or not, the curves for the individual rubber sorts always arranged themselves in the same order. Thus, vulcanization

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The Influence Exerted by the Vulcanization
of Elastomers Upon Their Adhesion to Non-
vulcanizable Polymers

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B004/B056

did not suppress the specific adhesion properties of the rubber types. The vitrified structure of cellophane showed low adhesion in comparison to caprone. The optimum of adhesion after 15 min of vulcanization was tested also on other combinations: rubber with percale, rubber with caprone apr.1520 (art.1520), and with glass fabric T₁ (T₁) (Table 1). In all cases a decrease of the duration of vulcanization from 35 to 15 min resulted in an increase of adhesion to the 1.8- to 3-fold. There are 2 figures, 1 table, and 9 references: 8 Soviet and 1 US. X

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im.
M. V. Lomonosova (Moscow Institute of Fine Chemical
Technology imeni M. V. Lomonosov)

PRESENTED: June 11, 1960 by S. S. Medvedev, Academician

SUBMITTED: June 3, 1960

Card 3/3

34134
S/138/62/000/002/005/009
A051/A126

15.9300
AUTHORS

Rayevskiy, V.G., Mayz'yels, M.G. (deceased), Voritskiy, S.S.
TITLE: Strength of adhesion between the covering and the casing, and its effect on certain properties of rubber-fabric materials

PERIODICAL: Kauchuk i rezina, no. 2, 1962, 17 - 23

TEXT: Various cases of interface formation are discussed, occurring in contact between high-polymers. Assumptions are made on the formation characteristics of this interface in plastic elastomer contact with a hard polymer of a high specific surface and a complex shape. The strength of adhesion between the various elements of these materials is determined by the real contact area and the value of the specific adhesion on the one hand, and mechanical adhesion on the other hand. A correlation is established on an example of rubber-fabric materials, between the gas permeability of the material and the strength of adhesion of the rubber covering and the fabric base. An explanation is given of this correlation, the dependence between the destruction resistance of rubber-fabric materials in wear and the strength of adhesion of the rubber covering to the fabric base is established. Finally, a relative method for evaluating the degree of monolocity

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A051/A126

Strength of adhesion.....

of the rubber-fabric materials and articles according to their specific gravities is recommended. Three possibilities are noted in determining the contact area of polymers with a complex shape through their visco-fluid properties: 1) Both polymers have high plasticity; then the maximum contact area is easily reached. 2) Both polymers are hard and not plastic; then a maximum contact area may only be reached by using a solvent. 3) One polymer is plastic, the other hard; then the formation of the interface depends on the degree of development and nature of the micro-profile of the substratum, the visco-fluid properties of the adhesive, magnitude of applied pressure, duration of its action and contact temperature. The formation of an interface in producing rubber-fabric materials belongs to the third group. The strength of adhesion of rubber to fabric depends highly on the visco-fluid properties of the rubber. The mechanism of gas diffusion through the rubber-fabric materials is thought to be similar to that of diffusion through filled vulcanizates. Three possibilities are further acknowledged in analyzing the effect of the properties of the interface Dint. is much greater than that of rubber DR; i.e. Dint. > DR. In this case, the real area of diffusion is equal to the nominal cross-section of the material subtracting the cross-section area of fibers and interface; thus, the gas permeability sharply drops. 2) The density

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Card 2/4

... of mono-
... mixed type to that of
... of adhesion of the various
The resistance of the rubber-fa-

34134

S/138/62/000/002/005/009

AO51/A:26

Strength of adhesion.....

of the interface is about equal to that of rubber: $D_{int.} \approx D_R$. Then, the gas permeability will drop less than in the first case. 3) The density of the interface is much less than that of rubber: i.e. $D_{int.} \ll D_R$; then, the gas permeability of the rubber-fabric material is lower than that of the rubber due to a smaller real area of diffusion. An increase in the density of the interface in all cases, regardless of the preparatory method and nature of the constructional elements of the rubber-fabric materials, causes a drop in the gas permeability of the latter. The degree of monolocity depends on the preparatory method and follows this sequence: pressing > spreading > calendering. It is further determined by the specific weight of the material. The degree of deviation of the specific gravity of a given material from its theoretical specific gravity is the criterion of monolocity. An increase in the degree of monolocity causes the gas-permeability of the rubber-fabric materials to drop sharply. Thus, the latter depends on the specific adhesion of the material elements, as well as the degree of monolocity. Further conclusions are made to the effect that an increase in the degree of monolocity and specific adhesion of the material, increases the lamination resistance and facilitates a lamination change from the adhesive and mixed type to that of cohesion. There is a correlation between the strength of adhesion of the various elements and gas-permeability of the material. The resistance of the rubber-fa-

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S/138/62/000/002/005/009

A051/A126

Strength of adhesion.

bris materials to destruction in wear is determined not only by the properties of the rubber covering in direct contact with the friction surface, but also by the strength of adhesion of the covering to the textile base. Two cases are possible:

1) F -friction force is equal to or more than the strength of adhesion P , i.e.

$F \geq P$; then, the lamination of the rubber covering from the fabric takes place almost immediately after the friction surface and mobility force have been applied.

2) $F < P$; then, there will first be wearing-off of the rubber, without lamination.

The strength of adhesion will drop and eventually become equal to F ; then lamination begins and subsequent destruction of the covering. Therefore, the resistance to destruction in wear is not only correlated with a change in the strength of adhesion, but in most cases is determined by this strength value. There are 5 tables and 13 references: 10 Soviet-bloc and 3 non-Soviet-bloc. The reference to the English-language publication reads as follows: H. Alter, W. Soller, Ind. Eng. Chem., 50, no. 6, 922 (1958). X

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti:
(Scientific Research Institute of the Rubber Industry).

Card 4/4

L 3162-66 EWT(m)/EPF(c)/EWP(j) RM

ACCESSION NR: AP5016886

UR/0374/65/000/003/0077/0080
678:532.6

AUTHOR: Maloshuk, Yu. S. (Moscow); Ravevskiy, V. G. (Moscow); Semenikhina, A. A. (Moscow); Voyutskiy, S. S. (Moscow)

TITLE: Cohesion of industrial elastomeric systems. 2. Effect of the amount of added plasticizer on cohesion strength

SOURCE: Mekhanika polimerov, no. 3, 1965, 77-80

TOPIC TAGS: cohesion strength, nitrile rubber, monopolar polyisobutylene, plasticized system

ABSTRACT: A study has been made of the effect of the amount of different plasticizers on the cohesion strength of elastomeric systems. The experiments were conducted with (polar) SKN-40 nitrile rubber and (nonpolar) P-200 polyisobutylene. The rubbers were plasticized with dibutyl phthalate, PN-6 oil, or vaseline oil, which exhibit varying compatibility with the rubbers. The plasticizers were added in amounts (7-50 vol%) which would not affect the processability of the systems. The results of the study, given in tabular form, indicated that: 1) cohesion strength increases monotonically with an increase in the amount of compatible plasticizer; 2) the cohesion strength drops continuously with an increase in the amount

Card 1/2

L 3162-66

ACCESSION NR: AP5016886

of incompatible plasticizers; and 3) the cohesion strength of the compatible system, SKN-40 rubber—dibutyl phthalate, goes through a maximum. The results are discussed in some detail and it is concluded that they confirm the diffusion nature of cohesion phenomena. Orig. art. has: 3 figures. [BO]

ASSOCIATION: none

SUBMITTED: 01Dec64

ENCL: 00

SUB CODE: MT

NO REF SOV: 003

OTHER: 001

ATD PRESS: 4031

Card 2/2 *md*

RAYBERRY, V.G.; LUTHER, M.V.; LUTHER, V.Y.

Studying the thermostability of welded joints of combined film materials. Film materials with one-sided polyethylene coating. Plast. massy. no.9:23-25 '65. (MIRA 18:9)

VOYUNELIY, S.S.; DERYAGIN, P.V.; RAYEVSKIY, V.G.

Nature of the adhesive bond between polymers. Dokl. AN SSSR 161
no.2:377-379 Mr '65. (MIRA 18:4)

1. Chlen-korrespondent AN SSSR (for Deryagin).

L 1447-66 EWT(m)/EPF(c)/EWP(j) RM

ACCESSION NR: AP5022591

UR/0190/65/007/009/1504/1509
678.01:53

AUTHOR: Rayevskiy, V. G.; Yagnyatinskaya, S. M.; Yepiseyeva, S. N.; Voyutskiy, S. S.

TITLE: Tear resistance of filled rubber mixtures and adhesion of elastomers to fillers as a function of elastomer-filler contact time and temperature

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 9, 1965, 1504-1509

TOPIC TAGS: filler, elastomer, adhesion, adhesion strength

ABSTRACT: A comparative study has been made of the effect of the molding time and temperature of filled elastomers on their tear resistance, and of the effect of compression time and temperature on elastomer-to-filler adhesion, which was determined by a method developed by the authors (S. S. Voyutskiy, et. al. Zavodsk. lab. 1964, no. 10, 1222). The experiments were conducted with nitrile (SKN-40) and sodium butadiene (SKB-35) rubbers, and such fillers as chalk or channel black. It was shown that there exists a correlation between tear resistance and elastomer-to-filler adhesion. This correlation has confirmed the authors' idea that the tear

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L 1147-66

ACCESSION NR: AP5022591

resistance of filled systems is determined by elastomer-to-filler adhesion strength.
Orig. art. Has: 7 figures. [B0]

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomono-
sova (Moscow Institute of Fine Chemical Technology); Moskovskiy tekhnologicheskii
institut myasnoy i molochnoy promyshlennosti (Moscow Technological Institute of the
Meat and Dairy Industry)

SUBMITTED: 19Sep64

ENCL: 00

SUB CODE: MT

NO REF SOV: 006

OTHER: 001

ATD PRESS: 4097

Card 2/2

3

L 1721-66 ENT(m)/EPF(c)/ENP(j). RM

ACCESSION NR: AP5022592

UR/0190/65/007/009/1510/1514
678.01:53

AUTHOR: Yagnyatinskaya, S. M.; Rayevskiy, V. G.; Frumkin, L. S.; Voyutskiy, S. S.

TITLE: Effect of vulcanization on the tear resistance of filled rubber mixtures and on elastomer-to-filler adhesion

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 7, no. 9, 1965, 1510-1514

TOPIC TAGS: filler, elastomer, vulcanizate, adhesion, adhesion strength, vulcanizate strength

ABSTRACT: A study has been made of the effect of vulcanization on the tear resistance of filled elastomers and on the elastomer-to-filler adhesion strength. The experiments were conducted with sodium butadiene (SKB-35) butadiene-methylstyrene (SKMS-30) and nitrile (SKN-40) rubbers, and with such fillers as chalk, channel black, or furnace black. A comparison was made of the effect of structure formation in the course of vulcanization on elastomer-to-filler adhesion with this effect on the tear resistance of filled and unfilled elastomers. It was shown that the elastomer-to-filler bond strength is one of the factors which determine the strength of filled elastomers. It is stressed, therefore, that improvement of elastomer-to-filler ad-

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L 1721-66

ACCESSION NR: AP5022592

6
hesion should be given greater weight as a means of increasing the strength of filled
vulcanizates. Orig. art. has: 5 figures. [BO]

ASSOCIATION: ^{4/55} Moskovskiy institut tekhnicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology); Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti (Moscow Institute of the Meat and Dairy Industry)

^{4/55} SUBMITTED: 1984-6

ENCL: 00

SUB CODE: MT

OTHER: 001

ATD PMSB 4096

NO REF SOV: 009

^{4/55}
Card 2/2

RAYWSKIY V.G., GUL V.Ye., VOYUTSKIY S.S., KAMENSKIY A.N., MONOVA L.

Study of the surface of a caprolactam film. Izv. vys. shk. Khim. i khim. tekhn. 8 no.1:131-134 '65. (MIRA 13.6)

1. Moskovskiy tekhnologicheskii institut myasnoy i molochnoy promyshlennosti i Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.

RAYEVSKIY, V.G.; PRIGORNYI, G.S.; GUL', V.Ye.; KAMENSKIY, A.N.; MONEVA, I.

Studying the nature of the destruction of adhesive joints of elastomers with caprolactam films. Izv.vys.ucheb.zav.; khim. i khim.tekh. 8 no.2:305 '65. (MIRA 18:8)

1. Moskovskiy tekhnologicheskii institut myasnoy i molochnoy promyshlennosti i Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni Lomonosova.

L 59280-65 EWT(m)/EPF(c)/EWP(j) Pc-4/Pr-4 RM

ACCESSION NR: AP5015573

UR/0153/65/G08/002/0305/0309

AUTHOR: Rayevskiy, V. G., Voyutskiy, S. S., Gul', V. Ye., Kamenskiy, A. N., Moneva, I.

TITLE: A study of the nature of the breaking of adhesion bonds between elastomers and a caprolactam film

SOURCE: IVUZ. Khimiya i khimicheskaya tekhnologiya, v. 8, no. 2, 1965, 305-309

TOPIC TAGS: polymer adhesion, elastomer, caprolactam, polychloroprene, polyisobutylene, natural rubber, polymer film

ABSTRACT: A study was made of the rupture of adhesion bonds between a commercial caprolactam film (PK-4) and polychloroprene (nairit), polyisobutylene (P-118), and natural rubber (smoked sheets) during the formation of bonds under normal conditions. The presence of the caprolactam between the phases was found to lower the adhesion strength of the bonds. The change in the surface of the caprolactam film after the adhesion bonds with the above substances were broken was studied by electron microscopy and fluorescence analysis. It was shown that in the presence of the caprolactam in the contact zone, the breaking of the adhesion bonds takes place along the layer of the caprolactam. In the absence of the latter, the surface of the film following layer separation does not

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L 59280-65

ACCESSION NR: AP5015573

2
differ from its surface prior to contact in the great majority of cases. However, in the case of the breaking of bonds between natural rubber and caprolactam film from which the caprolactam monomer has been washed out, the migration of low-molecular fractions and impurities contained in natural rubber to the surface of the substrate is possible. Orig. art. has: 7 figures.

ASSOCIATION: Moskovskiy tekhnologicheskii institut myasnoy i molochnoy promyshlennosti (Moscow Technological Institute of the Meat and Dairy Industry); Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology)

SUBMITTED: 19Jul63

ENCL: 00

SUB CODE: MT

NO REF SOV: 006

OTHER: 006

Card 2/2

L 2270-66 EWT(m)/EPF(c)/EWP(w)/EWP(t)/EWP(y)/EWP(l)/T/EWP(t)/EWP(k)/EWP(b)
 ACCESSION NR: AP5022224 EWA(c)/ETC(m) IJP(c) RM/JD/WB/BW
 UR/0191/65/000/009/0023/0025
 678-416:678.029.43

AUTHOR: Rayevskiy, V. G.; Postrigan', M. V.; Gul', V. Ye.

TITLE: Study of the thermal stability of welded joints of composite film materials

SOURCE: Plasticheskiye massy, no. 9, 1965, 23-25

TOPIC TAGS: weld evaluation, aluminum foil, polyethylene terephthalate, polyethylene plastic, cellulose, thermal stability

ABSTRACT: The authors studied the temperature dependence of the strength of welded joints of two types on two layer materials with polyethylene coatings. The base materials were aluminum foil (60 μ thick) with hydrated cellulose (cellophane) and polyethylene terephthalate (dacron) films. A polyethylene coating 25-35 μ was deposited by extrusion. Joints 5 mm wide were then prepared and their strength characteristics were measured. The strength of the joints at room temperature, relative to the strength of the material, was 12.5% in the case of the foil, 6.3% in the case of cellophane, and 19% in the case of dacron. When the temperature was raised to 100C, the strength of the joints dropped to

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L 2270-66
ACCESSION NR: AP5022224

20% of the value of room temperature, and did not change with further rise in temperature. The temperature dependence of the strength of the joints in shear was studied. The adhesion/strength in shear decreases abruptly at 90-100C, apparently because of the softening of polyethylene at these temperatures. It is shown that the strength of welded joints at a given temperature can be calculated from the strength determined under standard conditions. "G. F. Il'vokhina" and V. V. Kopchikov participated in the experimental part of the work." Orig. art. has: 2 figures, 1 table, and 1 formula.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: MM, MT

NO REF SOV: 001

OTHER: 005

Card

2/2

BUBEN, N.Ya., GOL'DANSKIY, V.I.; ZLATKEVICH, L.Ye.; NIKOL'SKIY, V.G.;
RAYEVSKIY, V.G.

Polymer mixtures studied by radiothermoluminescence. Dokl.
AN SSSR 162 no.2:370-372 My '65. (MIRA 18:5)

1. Institut khimicheskoy fizikii AN SSSR i Moskovskiy tekhnologicheskiy
institut myasnoy i molochnoy promyshlennosti. 2. Chlen-korrespondent
AN SSSR (for Gol'danskiy).

L 14168-66 EWF(j)/EWT(m)/T RM/WW

ACC NR: AP6003941

SOURCE CODE: UR/0374/65/000/005/0071/0077

AUTHOR: Rayevskiy, V. G. (Moscow); Tolmacheva, M. N. (Moscow);
Makarskaya, L. V. (Moscow)

60
B

ORG: none

TITLE: Effect of physical state on the tear of amorphous polymers

SOURCE: Mekhanika polimerov, no. 5, 1965, 71-77

TOPIC TAGS: polymer, amorphous polymer, copolymer, ^{plastic} deformation ~~new~~,
~~temperature characteristics~~, temperature dependence, rupture strength

ABSTRACT: The temperature dependence of the basic ~~deformation~~^{plastic} characteristics and breaking point of the SKS-85 copolymer at tear in the interval of $T < T_{st}$ to $T > T_t$ has been investigated. It was determined that the total work of rupture of the polymer in the glass state is determined by the work of elongation. The total work of rupture of the polymer in the high elastic state is basically determined by the work of formation of tear surface. Orig. art. has: 5 figures. [Based on author's abstract].

SUB CODE: 11/77/SUBM DATE: 25Jan65/ ORIG REF: 005/ OTH REF: 002

Cord 1/20

UDC: 678:539:4.019.1

2

L 14345-66 EWT(m)/EMP(j)/T/ETC(m)-6 WVI/RM

ACC NR: AP6005828 (A) SOURCE CODE: UR/0374/65/000/006/0098/0102

AUTHOR: Rayevskiy, V. G. (Moscow); Tolmacheva, M. N. (Moscow);
Makarskaya, L. V. (Moscow)

ORG: none

TITLE: Effect of physical state on the tear of filled systems based on
linear amorphous polymers

SOURCE: Mekhanika polimerov, no. 6, 1965, 98-102

TOPIC TAGS: amorphous polymer, black copolymer, linear polymer, filler,
polymer structure, rupture strength, ~~temperature dependence~~, mechanical
stress, thermal expansion, *heat effect, material deformation*

ABSTRACT: The effect of temperature within the range $T > T_t$ to $T < T_g$
on deformation, rupture, and rupture rate of the SKS-85 copolymer with
channel black as a filler has been investigated. It was shown that the
nature of curves describing the respective dependence does not differ
from that obtained in tests of the SKS-85 unfilled copolymer. It was
found that the introduction of black and chalk fillers increased the
rupture strength of the polymer while in the high elastic state and de-
creased it while in the glass state. It is believed that the incapa-
bility of conventional fillers to reinforce polymers in the glass state

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UDC: 678:539.4.019.1

L 14845-66

ACC NR: AP6005828

is a natural phenomenon. It is further assumed that the reversion of the reinforcement effect during transition from high elastic state to the glass state is caused by a sharp drop in adhesive strength joining the polymer and filler which occurs during the cooling of the samples from $T > T_g$ to $T < T_g$. This reduction in adhesive strength is due to shrinkage stress concentration in the contact zone as a result of the difference in thermal expansion coefficients of the polymer phase and of the filler. Orig. art. has: 6 figures. [Based on author's abstract]

SUB CODE: 071120/SUBM DATE: 15Mar65/ ORIG REF: 004

Card 2/2 mc

L 19365-66 EWT(m)/EWP(j)/EWA(h)/EWA(1) WW/RM

ACCESSION NR: AP5013758

UR/0020/65/162/002/0370/0372

AUTHOR: Buben, N. Ya.; Gol'danskiy, V. I. (Corresponding member AN SSSR); Zlatkevich, L. Yu.; Nikol'skiy, V. G.; Rayevskiy, V. G.

TITLE: Study of a polymer mixture by radiothermoluminescence

SOURCE: AN SSSR. Doklady, v. 162, no. 2, 1965, 370-372

TOPIC TAGS: polymer, thermoluminescence, radiothermoluminescence, butadiene elastomer

ABSTRACT: Radiothermoluminescence was used in this work to evaluate the extent of homogeneity of polymer mixtures. Butadiene elastomers SKB and SKD, identical in composition but differing with regard to content of vicinal bonds, were mixed on rollers in various proportions. After degassing, the mixture samples were irradiated with fast electrons at 77K (dose: 1 rad) and allowed to warm up at the rate of 10-12° per min. Previous work had shown that each of the two elastomers had a well-resolved luminescence maximum corresponding to the vitrification temperature of the elastomer. It was found in the present work that when the two elastomers are mixed insufficiently the mixture exhibits two luminescence maxima. On the other hand, when the mixture is sufficiently homogeneous, only one maximum is observed,

Card 1/2

L 19365-66

ACCESSION NR: AP5013758

somewhere between the two maxima of the individual elastomers It is planned to
apply this method to quantitative observations of processes in mixed systems. Orig.
art. has: 4 figures. [VS]

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical
Physics, Academy of Sciences, SSSR); Moskovskiy tekhnologicheskoy institut myasnoy
i molochnoy promyshlennosti (Moscow Technological Institute of the Meat and Dairy
Industry)

SUBMITTED: 09Jan65

ENCL: 00

SUB CODE: OC, MT

NO REF SOV: 007

OTHER: 000

ATD PRESS: 4015

Card 2/2 PQ

RAYEVSKIY, V.G.; POSTRIGAN', M.V.; GUL', V.Ye.

Heat resistance of the welded seams of composite film materials.
Plast. massy no.2:45-47 '66. (MIRA 19:2)

L 07881-67 EWT(m)/EWP(j) IJP(c) RM

ACC NR:

AP6031155

SOURCE CODE: UR/0190/66/008/009/1493/1500

AUTHOR: Rayevskiy, V. G.; Yagnyatinskaya, S. M.; Voyutskiy, S. S.

ORG: Moscow Institute of Fine Chemical Technology im. M. V. Lomonosov
(Moskovskiy institut khimicheskoy tekhnologii); Moscow Technological Institute
of the Meat and Dairy Industry (Moskovskiy tekhnologicheskii institut myasnoy i
molochnoy promyshlennosti)

TITLE: Adhesion of elastomers to powder fillers and reinforcement of filled
systems. Third report from the series Reinforcement of Polymers

SOURCE: Vysokomolekulyarnyye soyedineniya, v. 8, no. 9, 1966, 1493-1500

TOPIC TAGS: adhesion, elastomer, powder filler, polymer, polyisobutylene,
polymer reinforcement

ABSTRACT: The effect was studied of various additives, which change the
adhesion of SKN-40 rubber to chalk, on the strength of chalk-filled vulcanization
of SKN-40. It was found that there is a linear correlation between adhesion and
the reinforcement of vulcanized rubber according to rupture and tearing. The

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UDC: 678.01:53

L 07881-67

ACC NR: AP6031155

15.
effect of the molecular weight of the elastomer on the tear of polyisobutylene and butyl rubber samples and their mixtures with DG-100 carbon black was analyzed. There is a good correlation between the reinforcement and adhesion to carbon black of polyisobutylenes of different molecular weight. The dependences confirm the assumptions that the adhesion of elastomers to the particle surface of the filler determines the effect of the rubber reinforcement. Orig. art. has: 7 figures and 1 table. [Based on authors' abstract]

SUB CODE: 11/ SUBM DATE: 05Jun65/ ORIG REF: 008/ OTH REF: 003/

Card 2/2 bc

I. 07336-67 EWT(m)/EWP(v)/EWP(j) IJP(c) WW/GG/GD/RM

ACC NR: AT6034058

SOURCE CODE: UR/0000/66/000/000/0337/0340

54
52
B+

AUTHOR: Voyutskiy, S. S.; Gol'danskiy, V. I.; Gul', V. Ye.; Gustov, V. V.; Yegorov, Ye. V.; Rayevskiy, V. G.

ORG: Institute of Chemical Physics, AN SSSR (Institut khimicheskoy fiziki AN SSSR); Moscow Technological Institute of the Meat and Dairy Industry (Moskovskiy tekhnologicheskiy institut myasnoy i molochnoy promyshlennosti); Moscow Institute of Fine Chemical Technology im. M. V. Lomonosov (Moskovskiy institut tonkoy khimicheskoy tekhnologii)

TITLE: Effect of radiation on the adhesion of certain polymers

SOURCE: Simpozium po radiatsionnoy khimii polimerov. Moscow, 1964. Radiatsionnaya khimiya polimerov (Radiation chemistry of polymers); doklady simpoziuma. Moscow, Izd-vo Nauka, 1966, 337-340

TOPIC TAGS: adhesion, elastomer, polyethylene, cellophane, polycaprolactam, glass, irradiation, finishing

ABSTRACT: A study has been made of the effect of radiation on the adhesion of certain elastomers or polyethylene to such substrates as cellophane, polycaprolactam films or glass. The specimens were prepared and irradiated with fast electrons with integral doses of up to 10^8 rad. It was shown that the adhesion attains a maximum at a given dose and

Cord 1/2

0036-67

ACC NR: AT6034058

2

then drops with a further increase of the dose. The increase of the adhesion was attributed to the radiation-induced acceleration of the diffusion of macromolecular segments in the contact zone. The drop of the adhesion with a further increase of the dose was explained either as cross-linking in the elastomers (butadiene-styrene and nitrile rubbers) which causes shrinkage stresses, or as degradation (butyl rubber). High adhesion was attained by irradiation of specimens prepared with cellophane or glass finished with vinyltrichlorosilane. In the case of cellophane, adhesion increased with dose up to $\sim 10^7$ rad (maximum radiation withstood by the substrate) to attain ~ 275 g/cm. Adhesion of polyethylene to glass was increased to about 400 g/cm by combining vinyltrichlorosilane/finishing of the substrate with irradiation with doses up to 5×10^7 rad. The high adhesion of systems subjected to this combined treatment was attributed, in addition to the acceleration of diffusion phenomena, to chemical bonding between the adhesive and the modified substrate. Orig. art. has: 4 figures.

SUB CODE: 07, 11/ SUBM DATE: 25Jul66/ ORIG REF: 006/ OTH REF: 002
ATD PRESS: 5101

Card 2/2

vmb

ACC NR: AP7003764

(A) SOURCE CODE: UR/0374/66/000/006/0857/0861

AUTHOR: Maloshuk, Yu. S.; Titarenko, A. T.; Rayevskiy, V. G.;
Voyutskiy, S. ...

ORG: Moscow Institute of Fine Chemical Technology im. M. V. Lomonosov
(Moskovskiy institut tonkoy khimicheskoy tekhnologii)

TITLE: Cohesion of technical elastomer systems. 3. Effect of the migration of pseudoplasticizers on the cohesion of elastomer systems.

SOURCE: Mekhanika polimerov, no. 6, 1966, 857-861

TOPIC TAGS: elastomer, plasticizer, cohesion

ABSTRACT: A study has been made of the dependence of the cohesion strength on the shelf life of raw rubber specimens plasticized with "pseudoplasticizers" (plasticizers incompatible with the rubbers). The experiments were conducted with strips of polar nitrile (SKN-40) or nonpolar polyisobutylene (P-200) rubber plasticized with 3—5 parts by volume medical vaseline oil or 5—15 parts by volume dibutyl phthalate per 100 parts of the polymer, respectively. The amount of plasticizers was selected so as to exceed its maximum amount compatible with the rubber but not to affect the processing properties of the elastomer. The cohesion strength was measured in stripping tests. It was shown

Card 1/2

678:532.6

ACC NR:

that the cohesion strength of elastomer specimens treated with pseudo-plasticizers decreases with an increase in the shelf life of the elastomer specimens to be bonded; for individual systems cohesion strength attains a constant minimum value. Radiometric measurements conducted with C^{14} -tagged dibutyl phthalate showed that the cohesion strength of bonded P-200 specimens is inversely proportional to the amount of pseudo-plasticizers which has migrated from the bulk to the surface of the specimen. The authors thank P. A. Zagorets for making it possible to conduct the experiment and for his attention to the paper. Orig. art. has 4 figures.

SUB CODE: 11/ SUBM DATE: 28Oct65/ ORIG REF: 008/ OTH REF: 004

Card 2/2

ACC NR: AP7007298

SOURCE CODE: UR/0020/67/172/003/0637/0640

AUTHOR: Gul', V. Ye.; Dvoretzkaya, N. M.; Popova, G. G.; Rayevskiy, V. G.

ORG: Moscow Technological Institute of the Meat and Dairy Industry (Moskovskiy tekhnologicheskii institut myasnoy i molochnoy promyshlennosti)

TITLE: Strengthening effect in composite materials

SOURCE: AN SSSR. Doklady, v. 172, no. 3, 1967, 637-640

TOPIC TAGS: cellulose plastic, polyethylene, saran, rupture strength, adhesive bonding

ABSTRACT: The paper is devoted to a study of the influence of temperature on the physicomachanical properties of two-layer film materials under tension. The systems consisted of two identical substrate films (high-pressure polyethylene, saran, cellophane, cut out in the longitudinal and transverse direction) joined by a layer of viscoelastic binder (a 25% benzine solution of a mixture of polyisobutylenes with MW of 200,000 and 20,000 in the proportion of 1:9). The temperature variation of the cohesive strength of two-layer materials was found to obey the equation $\sigma_p = A v^n e^{u/RT}$, where σ_p is the breaking strength, A is a constant for a given type of sample, u is the "apparent" activation energy required for failure, v is the deformation rate, and n a coefficient determined by the rate of dissipation of the stresses at the point of growth of the region of failure. The experimental relation $\ln \sigma = f(1/T)$ for two-

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UDC: 678.5.06-416:539.4+539.612

ACC NR: AP7007298

layer and one-layer materials is characterized by the same values of the apparent activation energy of failure. It is shown that as the strength of the bond between the layers increases (with changing temperature), the strength of the two-layer material also increases. The established strengthening effect is explained by the blockage of the defects of one layer by the defect-free parts of the other, and the dissipation of stress concentration at sufficiently large values of the bonding strength between the layers. The paper was presented by Academician Kargin, V. A., 9Apr66. Orig. art. has: 4 figures, 1 table and 1 formula.

SUB CODE: 11/ SUBM DATE: 28Mar66/ ORIG REF: 003

Card

2/2

RAYEVSKIY, V.I.; SHURUBOR, Yu.V.

Processing data obtained from the external control of chemical analyses of geological samples. Izv.vys.ucheb.zav.; geol. i razv. 1 no.11:63-69 N '58. (MIRA 12:11)

1. Permskiy gosudarstvennyy universitet.
(Ores--Sampling and estimation)

KOPNIN, V.I.; RAYEVSKIY, V.I.; LEBENTSOV, I.A.

Density of the exploratory network in the stage of detailed
exploration of the Upper Kama deposit. Nauch.trudy Perm
NII no. 4:30-39 '62. (MIRA 17:6)

MYAGKOV, V.F., inzh.; RAYEVSKIY, V.I., inzh.

Selective breaking of sylvinite and carnallite ores during
borehole drilling in Upper Kama deposits. Izv. vys. ucheb.
zav.; gor zhur. 7 no.58-12 '64. (MIRA 17:12)

1. Permskiy gosudarstvennyy universitet (for Mygkov).
 2. Permskiy sovet narodnogo khozyaystva (for Rayevskiy).
- Rekomendovana kafedroy poiskov i razvedki poleznykh
iskopayemykh Permskogo gosudarstvennogo universiteta.

RAYEVSKIY, V.P.

Casting pistons, cylinders, and sleeves without risers. Lit.
proizv. no.5:26-27 Ag '54. (MLRA 7:8)
(Iron founding) (Cylinders)

KROPACHEV, A.M.; RAYEVSKIY, V.I.

Calcite mushrooms. Priroda 50 no.7:109 J1 '61. (MIRA 14:6)

1. Permskiy gosudarstvennyy universitet im. A.M.Gor'kogo (for Kropachev).
2. Upravleniye Permaskogo sovnarkhoza (for Rayevskiy).
(Sikhote-Alin' Mountains—Calcite)

KAPUSTIN, S.M.; RAYEVSKIY, V.P. (Leningrad)

Anesthesia in surgery on the spinal cord and spine. Vop. neuro-
khir. 27 no.3:20-24 My-Je '63. (MIRA 17:9)

1. Nauchno-issledovatel'skiy neyrokhirurgicheskiy institut imeni
A.L. Polenova (dir. - prof. V.M. Ugrumov), Leningrad.

KAPUSKIN, S.M.; RAYEVSKIY, V.P.

Controlled respiration during brain operations. Vop. neirokhir.
28 no.6:11-14 M-D '64. (MIRA 18:4)

1. Leningradskiy nauchno-issledovatel'skiy neyrokhirurgicheskii
institut imeni Polenova (dir. - prof. V.M.Ugryumov).

UGRYUMOV, V.M., prof.; GOLITSKY, N.I.; KALITIN, S.M.; KAYEVSKIY, V.P.

Problem of preventing terminal states during surgery on patients
with brain lesions. Vop.neirokhir. 18 no.4:1-6. 51-Ag '66.

(MIRA 18:3)

1. Leningradskiy nauchno-issledovatel'skiy neyrokhirurgicheskiy
institut imeni A.I.Kolenova (dir. - prof. V.M.Ugryumov).

RAYEVSKIY, V.S.

Effect of stimulation of the central segment of the vagus nerve on the respiratory center in experimental lungs ventilation. Fiziol. zh. SSSR 37 no.1:41-46 Jan-Feb 51. (CLML 20:8)

1. Department of Physiology, Scientific-Research Institute of Nutrition, Ministry of the Armed Forces USSR.

RAYEVSKIY, V.S.

Characteristics of the effect of afferent pulmonary impulses on the function of the respiratory center. Biul.eksp.biol.i med. 38 no.8: 18-22 Ag '54. (MLRA 7:9)

1. Iz TSentral'nogo instituta usovershenstvovaniya vrachey, Moskva.
(RESPIRATION,
resp. center, eff. of afferent pulm. impulses)
(LUNGS, physiology,
eff. of afferent pulm. impulses on resp. center)

RAYEVSKIY, V.S.; KUZNETS, Ye.I.; ANTIPOV, V.V.; TOLOVA, S.V.; UL'YANINSKIY, L.S.

Aleksandr Ivanovich Smirnov; on his 70th birthday. Fiziol. zhur.
44 no.3:266-267 Mr '58. (MIRA 11:4)
(SMIRNOV ALEKSANDR IVANOVICH, 1887-)

RAYEVSKIY, V.S.; KUZNETS, Ye.I.; ANTIPOV, V.V.; TOLOVA, S.V.

Bioelectric currents of the cerebral cortex during various functional states of the respiratory center. Fiziol.zhur. 45 no.10:1192-1200
O '59. (MIRA 13:2)

1. Akademiya meditsinskikh nauk SSSR, fiziologicheskaya gruppa,
Moskva.

(RESPIRATION physiol.)
(ELECTROENCEPHALOGRAPHY)

RAYEVSKIY, V.S.; ANTIPOV, V.V.; KUZNETS, Ye.I.; TOLOVA, S.V.; UL'YANINSKIY,
L.S.; SHAPOVALOVA, V.Ya.

Mechanism of the cessation of inhibition of the respiratory center
during stimulation of the central portion of the vagus nerve. Fiziol.
zhur. 46 no.10:1203-1209 0 '60. (MIRA 13:11)

1. Fiziologicheskaya gruppа chlena-korrespondenta AMN SSSR A.I.Smirnova,
Moskva.

(VAGUS NERVE)

(RESPIRATION)

SMIRNOV, A.I.; RAZIVSKIY, V.S.; BELYAVSKAYA, Ye.A., KOVALEVA, T.N.

Effect of the resistance to respiration on the functional state
of the respiration center in dogs in a chronic experiment. Biol.
eksp. biol. i med. 60 no.8:14-17 Ag '65. (MIRA 18:9)

1. Fiziologicheskaya gruppa (nauchnyy rukovoditel' - chlen-
korrespondent AMN SSSR prof. A.I. Smirnov) AMN SSSR, Moskva.

KALABUKHOV, N.I.

Vadim Vadimovich Raevskii. Biul.MOIP. Otd.biol. 58 no.1:86-89 '53.
(MLRA 6:5)

(Raevskii, Vadim Vadimovich, 1909-1947) (Zoology--Bibliography)
(Bibliography--Zoology)

USSR/Medicine - Animals
Medicine - Biology

Apr 48

"The Konda-Sosva National Park," V. V. Rayevskiy,
4 pp

"Nauka i Zhizn'" No 4

Describes fauna and archeological remains of
subject park, originally formed to preserve
colonies of beaver and sable discovered 20
years ago by expedition which visited the un-
frequented Konda and Malaya Sosva Rivers.

FDR

2/49T2

RAYEVSKIY, V.

USSR.

1686. ATOMIC PILES. Jacrot, B., Natta, F. and Raleyevski, V.
(Electricite, 1953, vol. 37, (1952), 42-57; abstr. in Ref. J. Phys., Moscow), 1954, (7), 75). Some of the reactors now in operation are described. Published data on experimental reactors are tabulated.

pmc

L 34962-65 EWG(j)/EWG(r)/EWI(1)/FS(v)-3/EWG(v)/EWG(a)/EWG(c) Pe-5 DD

ACCESSION NR: AP5008576

S/0286/65/000/006/0112/0113

AUTHORS: Rayevskiy, V. V.; Kalabukhova, L. N.

TITLE: A clamp for attaching a reserve parachute. Class 62, No. 169406

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 6, 1965, 112-113

TOPIC TAGS: parachute, safety device

ABSTRACT: This Author Certificate presents a clamp for attaching a reserve parachute to the suspension system of the main parachute (see Fig. 1 on the Enclosure). To provide for rapid detaching or mounting of the reserve parachutes, the body of the clamp carries a pin with a head. The pin has two protrusions for fixing it in the blind recesses. To facilitate the use of the clamp on the free ends of the suspension system, the body of the clamp is made together with the attaching buckle of the main circular strap. Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 18Jan64

ENCL: 01

SUB CODE: AC, PH

NO REF SOV: 000

OTHER: 000

Card 1/4

RAYEVSKIY, Yu.V., inzh.; GAVRILOV, N.M., starshiy inzh.; TANTSYURA, A.A., inzh.;

New types of locomotive antennas. Avtom., telem. i sviaz' 5
no.4:29-35 Ap '61. (MIRA 14:6)

1. Sluzhba signalizatsii i svyazi Vostochno-Sibirskoy dorogi (for Rayevskiy).
 2. Ufimskiy filial laboratorii signalizatsii i svyazi Kuybyshevskoy dorogi (for Gavrilov).
- (Antennas (Electronics))
(Railroads—Electronic equipment)

HAIRVUORI, YRJO

Boots and Shoes - Trade and Manufacture

Development of the Finnish shoe industry, Finsk. torg. zhur., No. 21, 1952.

Monthly List of Russian Accessions, Library of Congress, July 1952. Unclassified

PARTS, R.R. (Tallin); RAYG, A.P. [Raig, A.] (Tallin)

Use of a damper winding in d.c. motors with printed armature
windings. Elektrichestvo no.11:50-53 N '62. (MIRA 15:11)
(Electric motors, Direct current)

RAYG, Kh. A.

Rayg, Kh. A. -- "Certain Methods of Raising the Effectiveness of Manure and Mineral Fertilizers under the Conditions of the Estonian SSR." Moscow Order of Lenin Agricultural Acad imeni K. A. Timiryazev, Moscow, 1955 (Dissertation for the Degree of Candidate in Agricultural Sciences)

So: Knizhnaya Letopis', No. 24, Moscow, Jun 55, pp 91-104

000 000 0000000000

SOURCE CODE: UR/0413/66/000/014/0121/0121

INVENTOR: Fomina, A. S.; Rayg, Kh. A.; Degtereva, Z. A.; Veski, R. E.

ORG: none

TITLE: Plant-growth stimulator. Class 45, No. 184063

SOURCE: Izobret prom obraz tov zn, no. 14, 1966, 121

TOPIC TAGS: plant growth regulator, polycarboxylic aliphatic acid, polycarboxylic aliphatic acid salt, aqueous solution, polycarboxylic acid, plant growth

ABSTRACT: It is known that polycarboxylic acids of the aliphatic series, which are the by-product in the preparation of saturated C_4-C_{10} dicarboxylic acids from kerogen of oil shales, are used as plant-growth stimulators. It is proposed to use the polycarboxylic acids in the form of aqueous solutions of their K, NH_4 , and Ca salts in concentrations of 0.0001 to 0.1%, based on the dry salt. [WA-50; CBE No. 11]

SUB CODE: 07,43/SUBM DATE: 25Feb65/

Card 1/1

UDC: 631.811.98

ACC NR: AP6029065

SOURCE CODE: UR/0413/66/000/014/0121/0121

INVENTOR: Fomina, A. S.; Rayg, Kh. A.; Degtereva, Z. A.; Veski, R. E.

ORG: none

TITLE: Plant-growth stimulator. Class 45, No. 184063

SOURCE: Izobret prom obraz tov zn, no. 14, 1966, 121

TOPIC TAGS: plant growth regulator, polycarboxylic aliphatic acid, polycarboxylic aliphatic acid salt, aqueous solution, polycarboxylic acid, plant growth

ABSTRACT: It is known that polycarboxylic acids of the aliphatic series, which are the by-product in the preparation of saturated C_4-C_{10} dicarboxylic acids from kerogen of oil shales, are used as plant-growth stimulators. It is proposed to use the polycarboxylic acids in the form of aqueous solutions of their K, NH_4 , and Ca salts in concentrations of 0.0001 to 0.1%, based on the dry salt. [WA-50; CBE No. 11]

SUB CODE: 07,06/SUBM DATE: 25Feb65/

Card 1/1

UDC: 631.811.98

RAYG, Kh. A.

Rayg, Kh. A. -- "Certain Methods of Raising the Effectiveness of Manure and Mineral Fertilizers under the Conditions of the Estonian SSR." Moscow Order of Lenin Agricultural Acad imeni K. A. Timiryazev, Moscow, 1955 (Dissertation for the Degree of Candidate in Agricultural Sciences)

SO: Knizhnaya Letopis', No. 24, Moscow, Jun 55, pp 91-104

USSR/Chemistry - Acetylene, Derivatives
Chemistry - Synthesis

Nov/Dec 48

"Acetylene Derivatives: No 85, Synthesis and Study of Heterocyclic Compounds:
VI, Synthesis of L-Ethynyl-4-Hydroxypiperidines, Through the Condensation of Acetylene
With -Piperidones," I. M. Nazarov, V. Ya. Raygorodskaya, Inst Org Chem, Acad Sci
USSR, 11 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 6

Describes condensation of acetylene with -piperidones (I) through the action of
powdered potassium hydroxide, leading to formation of L-ethylene-4-hydroxypiperidines
(II) with good yield (about 90%). Also carried out hydrogenation of the latter in
presence of a Pd-catalyzer in corresponding L-vinyl-4-hydroxypiperidines and L-ethyl-
4-hydroxypiperidines. Established formation of stereoisomers during exhaustive
hydrogenation of II, and during action of magnesiumbromine-ethyl on I. Submitted
20 Mar 48.

PA 33/49T22

RAYGORODSKAYA, V. Ya.

Distr: 4E2c

15 15
✓ Insecticidal varnishes and paints. D. P. Yazikov, V. A.
Rundkvist, V. Ya. Ralgorodskaya, and B. E. Barash.
U.S.S.R. 107,844, Sept. 28, 1957. To the varnish or paint,
1.5-2% hexachlorocyclohexane is added. The addn. is
made to the vegetable oil cooled to 40-60° after its poly-
merization or oxidation. M. Hosen //

ACC NR: AP6035878 (A,N) SOURCE CODE: UR/0413/66/000/020/0103/0103

AUTHOR: Kul'bakh, V. O.; Rabinovich, N. A.; Raygorodskaya, V. Ya.

ORG: none

TITLE: Method of obtaining griseofulvin. Class 30, No. 187239

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 20, 1966, 103

TOPIC TAGS: griseofulvin, chemical synthesis, chemical compound, drug, ~~drug~~ ~~industry~~ carbon tetrachloride

ABSTRACT: An Author Certificate has been issued for a refinement of the method of producing griseofulvin given in Author Certificate No. 135187. In order to simplify the process, to increase yield, and to improve the quality of the product, the raw material for griseofulvin is washed with a nonflammable, organic solvent, such as carbon tetrachloride, and re-crystallized from methylene chloride. [WA-50]

SUB CODE: 07/ SUBM DATE: 22Mar62

Card 1/1

UDC: 615.45:615.779.932

RAYGORADSKAYA, V. YA.

PA 27/49T24

USSR/Chemistry - Acetylene Derivatives Jan/Feb 49
Chemistry - Heterocyclic Compounds

"Acetylene Derivatives: No 86, Study of Heterocyclic Compounds: VII, Synthesis of 4-Vinylethynyl-4-Hydroxypiperidines by Condensation of Vinylacetylene with γ -Piperidones," I. N. Nazarov, V. Ya. Raygoradskaya, V. A. Rudenko, Inst Org Chem, Acad Sci USSR, 3 pp

"Iz Ak Nauk SSSR, Otdel Khim Nauk" No 1

Investigates condensation of vinylacetylene with γ -piperidones effected by powderlike potassium hydroxide, leading to the formation of 4-vinylethylene-

27/49T24

USSR/Chemistry - Acetylene Derivatives Jan/Feb 49
(Contd)

4-hydroxypiperidines with a yield of about 80%. Hydrogenation of the latter was also effected in the presence of a Pd-catalyzer in the appropriate 4-butyl-4-hydroxypiperidine. Established the formation of stereoisomers during the hydrogenation of 4-vinylethylene-4-hydroxypiperidines and under the action of magnesiumchlorobutyl on γ -piperidone. Submitted 20 Mar 48.

27/49T24

COVASSIORATA, YE. A.,

Electrotherapeutics

Application of high frequency electric current in the treatment of ascariasis and trichocephaliasip; first publication. Sov.med., 16, No. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, August 1952. Unclassified.

KUDENKO, I.D.; RAYGORODETSKAYA, Ye.A.; SLOBODSKAYA, R.A.

Application of high frequency electric current in the treatment of
ascariasis and trichocephaliasis; first communication. Sovet. med.
No. 2:36-37 Feb 52. (CML 21:5)

1. Of the Therapeutic Hospital of Frunzenskiy Rayon and of the Physio-
therapeutic Polyclinic, Moscow.

KUDENKO, I. D., RAYGORODITSKAYA, Ye. A.,
SLOFODSKAYA, R. I.

Nematoda

Application of high frequency electric current in the treatment of ascariasis and trichocephaliasis; first publication. Sov. med. 16 no. 2, 1952

9. Monthly List of Russian Accessions, Library of Congress, August 1952. Unclassified.

KUDENKO, I. S.; RAYGORD-ETSKAYA, Ye. A.;
SLOPODSKAYA, R. S.

Intestines - Diseases

Application of high frequency electric current in the treatment of ascariasis and trichocephaliasis; first publication. Sov.med. 16, No. 2, 1952

9. Monthly List of Russian Accessions. Library of Congress, August 1952. Unclassified.

AUDENKO, I.D., RAYGORODETSKAYA, YE.A., SLOBODSKAYA, R.A.

Electrotherapeutics

Application of high frequency electric current in the treatment of ascariasis and trichocephaliasis; first publication. Sov. med. 16, no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, August 1952 ~~hbb~~, Uncl.

KUDENKO, I.D., RAYGORODETSKAYA, YE. A., SLOBODSKAYA, R.A.

Electrotherapeutics

Application of high frequency electric current in the treatment of ascariasis and trichocephaliasis; first publication. Sov. med., 16, no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, August 1952 ~~1/1/1~~, Uncl.

KUDENKO, I.D.; RAYGORODETSKAYA, Ye.A.; SLOBODSKAYA, R.S.

Intestines - Diseases

Application of high frequency electric current in the treatment of ascariasis and trichocephaliasis; first publication. Sov. med. 16, no. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, August 1952 ~~APFB~~, Uncl.

KUDENKO, I.D., RAYGORODETSKAYA, Ye. A., SLOBODSKAYA, R.A.

Nematoda

Application of high frequency electric current in the treatment of ascariasis and trichocephaliasis; first publication. Sov. med. 16, no. 2, Feb. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, August 1952 ~~1951~~, Uncl.

KUDENKO, I.D.; RAYGORODETSKAYA, Ye. A.; SLOBODSKAYA, R.S.

Application of high frequency electric current in the treatment of ascariasis and trichocephaliasis; first publication. Sov. med. 16, No. 2, 1952.

9. Monthly List of Russian Accessions, Library of Congress, August 1952 ~~1966~~, Uncl.